WHAT IS CLAIMED IS:

1. A coil assembly, comprising:

at least one first coil; and

at least one second coil, wherein the coils are arranged in a common plane, the at least one first coil and the at least one second coil overlapping one another partially and defining at least one crossover area where respective crossover sections of the at least one first coil and the at least one second coil cross one another, and the crossover sections having a respective crossover section height perpendicular to the common plane, the combined crossover section heights of the crossover sections in the crossover area equal at most a height of one of the at least one first coil and the at least one second coil outside the at least one crossover area.

2. A coil assembly according to claim 1, wherein the at least one first coil and the at least one second coil comprise a first, a second and a third coil which are arranged in a common plane, wherein the first, second and third coil overlap one another partially in at least one crossover area and in the at least one crossover area the respective crossover sections of the first, second and third coils cross over one another.

3. A coil assembly according to claim 1, wherein each coil has a first side and a second side, the first and second sides being oriented parallel to the common plane, the first and second sides being located at a distance from one another, thereby defining the height of the coil, each crossover section height of each coil is arranged between a first plane and a second plane, and the first and second plane are defined by the respective first and second sides of each coil.

4. A coil assembly according to claim 2, wherein the crossover section of the second coil is positioned between the crossover sections of the first and third coils in a direction perpendicular to the common plane.

5. A coil assembly according to claim 1, wherein each respective coil comprises at least one winding, and wherein the cross-sectional area of the at least one winding in a crossover

section of a respective coil is smaller than the cross-sectional area of the at least one winding outside the crossover section of the respective coil.

6. A coil assembly according to claim 1, wherein the respective crossover section heights of the at least one first and the at least one second coil are substantially equal to one another.

7. A coil assembly according to claim 1, wherein the respective coils are constructed having a substantially rectangular form, each coil comprising two long legs and two short legs, and wherein the at least two coils cross one another in an area of the respective short legs.

8. A positioning device, comprising:

a first part and a second part which are displaceable with respect to one another in at least one direction,

the first part comprising a system of magnets,

the second part comprising a coil assembly comprising at least one first coil and at least one second coil, the coils being arranged in a common plane, the at least one first coil and the at least one second coil overlapping one another partially and defining at least one crossover area where respective crossover sections of the at least one first coil and the at least one second coil cross one another, the crossover sections having a respective crossover section height perpendicular to the common plane, wherein the combined crossover section heights of the crossover sections in the crossover area equal at most a height of one of the at least one first coil and the at least one second coil outside the at least one crossover area.

9. A positioning device according to claim 8, wherein the at least one direction extends parallel to the common plane.

10. A device manufacturing method, comprising:

providing a substrate;

providing a beam of radiation using an illumination system;

using a patterning device to impart the beam with a pattern in its cross-section;

projecting the patterned beam of radiation onto a target portion of the substrate; and

providing a positioning device comprising a first part and a second part which are displaceable with respect to one another in at least one direction, the first part comprising a system of magnets, the second part comprising a coil assembly comprising at least one first coil and at least one second coil, the coils being arranged in a common plane, the at least one first coil and the at least one second coil overlapping one another partially, defining at least one crossover area where respective crossover sections of the at least one first coil and the at least one second coil cross one another, the crossover sections having a respective crossover section height perpendicular to the common plane, wherein the combined crossover section heights of the crossover sections in the crossover area equal at most a height of one of the at least one first coil and the at least one second coil outside the at least one crossover area;

connecting the first part to one of a support for the patterning device and a table for the substrate;

connecting the second part to the other of the support and the table; and

moving the support and the table with respect to each other using the positioning device.

11. A lithographic projection apparatus, comprising:

an illumination system configured to provide a beam of radiation;

a support configured to support a patterning device, the patterning device configured to impart the beam with a pattern in its cross section;

a substrate table configured to hold a substrate;

a projection system configured to project the patterned beam onto a target portion of the substrate; and

a positioning device comprising a first part and a second part which are displaceable with respect to one another in at least one direction,

the first part comprising a system of magnets,

the second part comprising a coil assembly comprising at least one first coil and at least one second coil, the coils being arranged in a common plane, the at least one first coil and the at least one second coil overlapping one another partially and defining at least one crossover area where respective crossover sections of the at least one first coil and the at least one second coil cross one another, the crossover sections having a respective crossover section height perpendicular to the common plane, wherein the combined crossover section

heights of the crossover sections in the crossover area equal at most a height of one of the at least one first coil and the at least one second coil outside the at least one crossover area.

12. An apparatus according to claim 11, wherein the first part is connected to one of the support and the substrate table and the second part is connected to the other of the support and the substrate table.

13. An apparatus according to claim 11, wherein the at least one first coil and the at least one second coil comprise a first, a second and a third coil which are arranged in a common plane, wherein the first, second and third coil overlap one another partially in at least one crossover area and in the at least one crossover area the respective crossover sections of the first, second and third coils cross over one another.

14. An apparatus according to claim 13, wherein each coil has a first side and a second side, the first and second sides being oriented parallel to the common plane, the first and second sides being located at a distance from one another, thereby defining the height of the coil, each crossover section height of each coil is arranged between a first plane and a second plane, and the first and second plane are defined by the respective first and second sides of each coil.

15. An apparatus according to claim 13, wherein the crossover section of the second coil is positioned between the crossover sections of the first and third coils in a direction perpendicular to the common plane.

16. An apparatus according to claim 11, wherein each respective coil comprises at least one winding, and wherein the cross-sectional area of the at least one winding in a crossover section of a respective coil is smaller than the cross-sectional area of the at least one winding outside the crossover section of the respective coil.

17. An apparatus according to claim 11, wherein the respective crossover section heights of the at least one first and the at least one second coil are substantially equal to one another.

18. An apparatus according to claim 11, wherein the respective coils are constructed having a substantially rectangular form, each coil comprising two long legs and two short legs, and wherein the at least two coils cross one another in an area of the respective short legs.